

REMARKS/ARGUMENTS

Favorable reconsideration of this application is respectfully requested.

Claims 1, 4, 5, 12, 19-22, 24-29, 33, 35-40, and 49-61 are pending. Claims 22, 24-29, 33, and 35-40 were previously withdrawn. Claims 2-3, 6-11, 13-18, 23, 30-32, 34, 41-48, and 62 were previously canceled. Claim 63 is canceled by the present amendment. Claim 1 is amended. Support for amended claim 1 is found in at least the previously presented claims, including canceled claim 63. Thus, no new subject matter is added.

The outstanding Office Action rejected claims 1, 4, 5, 12, 19, 21, and 49-61 as unpatentable under 35 U.S.C. § 103(a) over Stachowiak (U.S. Publication No. 2003/0170466) in view of Lingle (U.S. 6,445,503). The Office Action rejected claim 20 as unpatentable under 35 U.S.C. § 103(a) over Stachowiak in view of Lingle and Szczyrbowski et al. (U.S. 5,279,722). The Office Action finally rejected claim 63 as unpatentable under 35 U.S.C. § 103(a) over Stachowiak in view of Lingle and Farmer et al. (U.S. 4,973,511).

Amended claim 1 recites a method for producing a glazing having a multilayer coating deposited on a glass substrate and now includes using a maximum of 10% oxygen atmosphere to deposit the second protective layer as previously recited in claim 63. The method includes depositing a first transparent dielectric layer, then depositing a functional Ag-based infrared reflective layer, and depositing on the Ag-based layer a first protective layer in an atmosphere containing a maximum of 20% oxygen. A second protective layer is deposited directly on the first protective layer in an atmosphere containing a maximum of 10% oxygen. Finally, a second transparent dielectric layer is deposited.

This claimed process of forming a coating having two specific adjoining protective layers above the silver layer in a low oxygen environment results in a coating that protects the silver layer from oxidation during formation of the coating and during thermal heat treatment of the glazing. None of the cited references suggest the claimed method.

The Office Action relies primarily on Stachowiak as disclosing a coating formed by depositing a first dielectric layer, a silver layer, a first protective layer less than 3 nm thick (e.g., NiCrOx), a second layer less than 7 nm thick (e.g. TiOx), and a second dielectric layer. Notably, paragraph 45 of Stachowiak discloses that the TiOx dielectric layers have a wide thickness ranging from 10-900Å, does not include any examples with the relatively thin TiOx layer of the present invention, and is concerned with changing the index of refraction from the bottom to the top dielectric layers in the system.

The Office Action recognizes that Stachowiak does not disclose or suggest that the second protective layer, i.e., the layer that is deposited on the first protective layer and is not adjacent to the silver layer, is deposited in an atmosphere of no more than 10% oxygen. Page 8. The Office Action therefore relies on Farmer et al. which teaches a single layer formed in a low atmosphere directly on a silver layer, citing col. 13, lines 21-30. The Office Action concludes that it would have been obvious to one of ordinary skill in the art to include the low oxygen content layer as in Farmer et al. in order to prevent damage to the silver layer due to oxidation.

Applicants respectfully traverse the Office Action's rejection of the claims based on Farmer et al. In the cited Farmer et al. embodiment, a WO₃ layer is deposited directly on a silver layer under low oxygen conditions so as not to damage the silver. Thus, the WO₃ layer of Farmer et al. is not relevant to the second protective layer of the claimed invention. The claimed second protective layer is not deposited on the silver layer. Instead, claim 1 recites that the second protective layer is deposited on the first protective layer. Farmer et al. provides no suggestion at all that a layer not in contact with the silver layer should be deposited in a very low oxygen atmosphere. In other words, Farmer et al. provides no guidance at all as to the appropriate oxygen content to use in forming the claimed second protective layer.

In Stachiowiak, the NiCrO_x layers are formed on the silver layers and the TiO_x layers are formed on the NiCrO_x layers. Farmer et al. might provide a hint that the NiCrO_x layers in Stachowiak should be formed in a low oxygen environment, though even this hint seems at odds with Stachowiak which teaches that the NiCrO_x layers have relatively higher oxygen content because of the desire to have high visible transmission. ¶ 48. However, Farmer et al. provides no guidance relevant to the formation of Stachiowiak's TiO_x layers because these layers are formed on the NiCrO_x layers and not the silver layers. Thus, Farmer et al.'s teaching concerning protecting the silver layers does not apply to the TiO_x layers of Stachiowiak. For these reasons, the Office Action's rejection based on Farmer et al. is overcome.

In addition, the Office Action relies on Lingle. Lingle also does not disclose or suggest that the second protective layer be formed in an atmosphere having less than 10% oxygen. Specifically, the Office Action cites to TiO_x layers in Lingle Table III which are in contact with the silver layer deposited in an 18% oxygen atmosphere. However, these Lingle TiO_x layers are also not relevant to the presently claimed second protective layers first, because they are in contact with the silver layer and thus not second protective layers formed on first protective layers as claimed, and second, because even these layers do not disclose or suggest forming second protective layers in a maximum of 10% oxygen. For all of the above reasons, Applicants respectfully suggest that Stachiowiak, Lingle, and Farmer et al. do not disclose or suggest the 10% oxygen content used to form the second protective layer recited in amended claim 1.

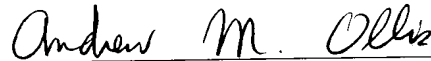
Accordingly, Stachiowiak, Lingle, and Farmer et al. do not disclose or suggest the features of amended claim 1. Because claims 4, 5, 12, 19-21 and 49-61 depend on claim 1, they are also allowable over the cited references for the same reasons as claim 1.

For the reasons discussed above, no further issues are believed to be outstanding in the present application, and the present application is believed to be in condition for formal allowance. Therefore, a Notice of Allowance for claims 1, 4, 5, 12, 19-21 and 49-61 is earnestly solicited.

It is respectfully submitted that the present application is in condition for allowance, and a favorable decision to that effect is respectfully requested.

Respectfully submitted,

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